H. Report Preparation

H.1 EIR Preparers

A consultant team of over 28 key technical and administrative personnel headed by Aspen Environmental Group prepared this document under the direction of the CSLC. Table H-1, below, presents the preparers and technical reviewers of this document and their qualifications.

Table H-1. EIR Preparers and Persons Consulted

Agency/Firm	Personnel by Name and Title	Education	Years Exper.	Issue Area
Aspen Environmental Group	Hamid Rastegar, Principal	PhD Environmental Science & Engineering, M.S. Environmental Science & Engineering, B.S. Civil Engineering	24	Principal-in-Charge
	Susan Lee, Vice President, San Francisco Operations	M.S. Applied Earth Science, B.A. Geology	19	EIR Project Manager
	Brewster Birdsall, Senior Associate, Engineer/Physical Scientist	M.S. Civil Engineering, B.S. Mechanical Engineering	8	Noise/Air Quality
	Matt Fagundes, Associate, Earth Scientist	B.S. Environmental Studies	6	Traffic and Transportation
	Mark Tangard, Administrative Manager	B.A. Geography	29	Document Production
	Hedy Born, Staff Environmental Scientist	M.S. Earth Systems, B.S. Earth Systems	1	Project Description, Alternatives, Land Use
	Phil Lowe, Senior Associate, Earth Scientist	M.S. Watershed Management, B.S. Wildlife Management	24	Hydrology/Water Quality
	Negar Vahidi, Senior Associate, Social Scientist	Master of Public Administration (MPA), B.A. Political Science	10	Environmental Justice, Utilities and Service Systems
	Jacob Hawkins, Staff Social Scientist	M.S. Environmental Science and Management, B.S. Biology	2	Environmental Justice, Utilities and Service Systems
	Kati Simpson, Associate, Graphics	B.A. Geography	18	Graphics
	Bruce Barnett, Director of Biological Services and Senior Associate, Biology	Ph.D. Zoology, M.A. Zoology, M.S. Zoology, B.A. Sociology	20	Issue Area Coordinator, Biological Resources
	Tom Scofield, Associate, Biology	B.S. Environmental Biology	12	Wildlife/Biological Resources
	Dan Gorfain, Senior Associate, Engineer/Planner	M.S. Urban & Regional Planning, B.S. Engineering	30	Land Use and Agricultural Resources
Basin Research Associates	Colin Busby, Principal Archaeologist/Cultural Resources Manager	PhD Anthropology, M.A. Anthropology, B.A. Anthropology	30	Cultural Resources/Historic Preservation
	Donna Garaventa, Research Scientist	PhD Anthropology, M.A. Anthropology, B.A. Anthropology	27	Cultural Resources/Historic Preservation
Chambers Group	Noel Davis, Vice President	Ph.D., Biological Oceanography, B.A. Zoology	25	Marine Biology and Marine Water Quality
EDM Services, Inc	Brian Payne, PE, Principal	B.S. Civil Engineering	23	Issue Area Coordinator, Engineering and Safety
	Emily Witten, Project Engineer	B.S. Mechanical Engineering	1	Engineering and Safety
EJL & Associates	Eugenia Laychak, Principal	B.A. Geography & Regional Planning	25	Commercial Fisheries

Table H-1. EIR Preparers and Persons Consulted

Agency/Firm	Personnel by Name and Title	Education	Years Exper.	Issue Area
Geotechnical Consultants	James Thurber, Associate Geologist	M.S. Geology, B.S. Geology	18	Geology and Environmental Contamination
	Aurie Patterson, Project Geologist	B.A. Geology	9	Environmental Contamination
	Janine Band, Senior Geologist	Ph.D. Geology, M.S. Geology, B.S. Geology	15	Geology/ Engineering Geology
	Doug Herold, Staff Geologist	B.S. Geology	7	Geology/ Engineering Geology
Ecosystems Research Group	Mike Beltz	B.A. Geography	8	Mapping
	Gregory Kennett	B.S. Watershed Management	24	Mapping
Wetlands Research Associates, Inc.	Jim Buchholz, Senior Wetland Scientist	M.A. Biology, B.A. Biology	22	Wetlands and Estuarine Biology
	Phil Greer, Associate Wetland Scientist/Botanist	M.S. Ecology & Systematic Biology, B.S. Natural Resource Planning	8	Botany
	Shannon Lucas, Associate Botanist	B.A. Biology	7	Botany

H.2 EIR Information Contacts

Table H-2 lists the people who were contacted and consulted during the preparation of this document and in what section their information was used.

Table H-2. EIR Information Contacts

Agency/Organization	Name and Title	Section Information Used In
California State Lands Commission	Steve L. Jenkins, Assistant Chief, Division of Environmental Planning and Management	Consulted During EIR Preparation
	Judy Brown, Environmental Scientist	Consulted During EIR Preparation
	Chandra Basavalinganadoddi, Senior Engineer, Petroleum Structures	D.2 Pipeline Safety and Risk of Accidents; D.7 Geology, Soils, and Paleontology
	Goodyear K. Walker, Staff Environmental Scientist	Consulted During EIR Preparation
	Eric Gillies, Staff Environmental Scientist	Consulted During EIR Preparation
	Lorna Burks, Public Land Management Specialist	Consulted During EIR Preparation
Spec Services, Inc. (Consultant to SFPP)	Chris Smart, Project Engineer	D.2 Pipeline Safety and Risk of Accidents
	Bud Pingree, Engineer	D.2 Pipeline Safety and Risk of Accidents
SFPP (Kinder Morgan Energy Partners)	Ed Ferrer, Engineering Manager	D.2 Pipeline Safety and Risk of Accidents
	Jill Jefferson, Project Manager	D.2 Pipeline Safety and Risk of Accidents
	Dave Comman, Director Project Planning	D.2 Pipeline Safety and Risk of Accidents
URS (Consultant to SFPP)	David Marx, Project Manager	D.2 Pipeline Safety and Risk of Accidents
Yolo-Solano Air Quality Management District	Carl Vandergraff, Associate Air Quality Planner; Daniel O'Brien, Associate Air Quality Planner	D.3 Air Quality
City of Martinez	Frank Abejo, Planner	D.9 Land Use, Public Recreation, and Special Interest Areas
City of Fairfield	Charles Beck, Engineering	D.9 Land Use, Public Recreation, and Special Interest Areas
City of Suisun City	Gary Cullen, Assistant City Manager	D.9 Land Use, Public Recreation, and Special Interest Areas

Table H-2. EIR Information Contacts

Agency/Organization	Name and Title	Section Information Used In
Yolo County	Lance Low, Planner	D.9 Land Use, Public Recreation, and Special Interest Areas
City of Benicia	Colette Meunier, Community Development Director	D.9 Land Use, Public Recreation, and Special Interest Areas
City of Fairfield	Brian Miller, Planner	D.9 Land Use, Public Recreation, and Special Interest Areas
Contra Costa County	Patrick Roach, Principal Planner	D.9 Land Use, Public Recreation, and Special Interest Areas
Port of Sacramento	Tom Scheeler, Director of Engineering	D.9 Land Use, Public Recreation, and Special Interest Areas
City of West Sacramento	David Tilley, Planner	D.9 Land Use, Public Recreation, and Special Interest Areas
Solano County	Matt Walsh, Planner	D.9 Land Use, Public Recreation, and Special Interest Areas
Benicia Public Works Department	Ed Greco, Engineering Technician	D.12 Traffic and Transportation
Contra Costa County Public Works	Andrew Hawksworth, Engineering Technician	D.12 Traffic and Transportation
Fairfield Public Works Department	Jaime Sabile, Engineering Technician II	D.12 Traffic and Transportation
Union Pacific Railroad	Mike Furtney, Regional Director of Public Relations	D.12 Traffic and Transportation
West Sacramento Public Works Department	Luther Mui, Engineering Assistant III	D.12 Traffic and Transportation
Yolo County Planning and Public Works Department	Suellen A. Coast, Engineer	D.12 Traffic and Transportation
Solano County Transportation Department	Gregory Meeks, Engineer	D.12 Traffic and Transportation
Suisun City Public Works Department	Julie Pappa, Engineer	D.12 Traffic and Transportation

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Abbreviations:
n.d. no date
v.d. various dates
N.P. no publisher noted
n.p. no place of publisher noted

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H.4 List of Definitions and Acronyms

100-Year Flood: A stream flow caused by a discharge that is exceeded, on the average, only once in 100 years. A 100-year flood has a 1% chance of occurrence in any given year.

500-Year Flood: A flood that has a 0.2% chance of occurring in a given year.

AAQS: Ambient Air Quality Standard; a federal and state measure of the level of air contamination that is not to be exceeded in order to protect human health.

ACE: Assessment of Chemical Exposure.

ACE: U.S. Army Corps of Engineers.

ac-ft: Acre foot; a unit of measure for water demand and supply. The volume of 1 acre foot would cover 1 acre to a depth of 1 foot and is equal to 325,851 gallons.

ACHP: U.S. Advisory Council on Historic Preservation.

Acid Fog: Airborne moisture, with acidic chemical balance, made so by the contaminants it contains.

ADT: Average Daily Traffic; number of vehicles traveling per normal day on a roadway.

Aerosol: Wet or dry small particles in the atmosphere. Also called "particulate matter."

AFFF: Aqueous film-forming foam.

Aggradation (of a Stream Channel Bed): Raising of stream bed elevation, caused by sediment supply in excess of sediment-transport capacity.

Air Quality Standard: The specified average concentration of an air pollutant in ambient air during a specified time period, at or above which level the public health may be at risk; equivalent to AAQS.

Algae: A collective term for several taxonomic groups of primitive chlorophyll-bearing plants which are widely distributed in fresh and salt water and moist lands. This term includes the seaweeds, kelps, diatoms, pond scums, and stoneworts.

Ambient Air: Any unconfined portion of the atmosphere; the outside air.

Ambient Noise Level: Noise from all sources, near and far. ANL constitutes the normal or existing level of environmental noise at a given location.

ANSI: American National Standards Institute

Anti-cyclone: Clockwise circulation of air about a high-pressure center.

Antidunes: Ripple bed forms that occur in rapidly flowing alluvial channels.

APCD: Air Pollution Control District; a regional government bureau responsible for attainment and management of air quality standards through permitting and regulating of the emission sources.

API: American Petroleum Institute.

APL: ARCO Pipe Line.

APN: Assessor Parcel Number, given to a parcel, or a specified area, of land by County tax assessors.

AQAP: Air Quality Attainment Plan; equivalent to Air Quality Management Plan (AQMP), which outlines rules and regulations for improving and the quality of air in the region to reach an attainment status (in attainment of standards).

AQMD: Air Quality Management District.

AQMP: Air Quality Management Plan.

Arroyo: A stream channel or gully in arid country, usually with steep banks, dry much of the time.

ASME: American Society of Mechanical Engineers.

ASPIS: Abandoned Site Program Information System.

ASTM: American Society for Testing Materials.

ATC: Authority to Construct. A permit required by local air quality regulatory agencies before construction of a major emission source is started.

Atmospheric Stability: The resistance to or enhancement of vertical and horizontal air movement, which regulates the amount of air exchange and affects pollution concentration or dispersion.

Average: As a measure, the sum of the measurements (over a specified period) divided by the number of measurements.

Avifauna: Birds.

B.P: Before Present

Backfill: Earth that is replaced after a construction excavation.

Backhoe: A self propelled machine with an arm equipped with a toothed shovel that scoops earth as the shovel is pulled toward the machine.

BACT: Best Available Control Technology; the most improved devices or air emission reduction technology currently available for controlling pollutant emissions.

BAAQMD: Bay Area Air Quality Management District.

BARCT: Best Available Retrofit Control Technology.

Barranca: A ravine caused by rain, or a water course.

Barrel: A unit of volume measure for crude oil and liquid products equal to 42 U.S. gallons.

Baseline: A set of existing conditions against which change is to be described and measured.

Bbl: Barrel(s); one barrel equals 42 gallons.

Bed Forms: Local topographical interruptions to the uniformity of a channel bed occurring during the passage of a stream flow. Antidunes are an example of bed forms.

Bell hole: An excavation dug beneath a pipeline to provide room for the use of tools by workers.

Benthic: Relating to or occurring at the bottom of ocean.

Berm: A narrow shelf, path, or ledge typically at the top or bottom of a slope; also, an earthen, mounded wall.

BIMP: Business Impact Mitigation Plan.

Biota: Living organisms.

Block valve: A valve which can be closed to isolate one section of pipe from the adjacent section.

BOD: Biological Oxygen Demand; the free oxygen-removing capability of biologically derived materials in the environment.

BPD: Barrels per day.

Brackish: Pertaining to water, generally estuarine, in which the salinity ranges from 0.5 to 17 parts per thousand by weight.

Btu: British thermal unit, a measurement of energy, the amount of energy that can be obtained as heat by combusting approximately 1/1000 cubic feet of natural gas.

Butterfly valve: A type of valve which is opened and closed by a disc that pivots on a shaft in the throat of the valve.

CAAQS: California Ambient Air Quality Standard; see AAQS.

CAL EPA: The state equivalent of the federal EPA (see EPA).

CAL OSHA: The State equivalent of the federal OSHA (see OSHA).

Cal Sites: A list of potentially hazardous sites generated through the DTSC's Control Board.

Caltrans: California Department of Transportation.

CAPCOA: California Air Pollution Control Officers Association.

Capital Flood: Runoff from a 50-year storm occurring on saturated ground.

CARB: California Air Resources Board, sometimes abbreviated as ARB.

Cathodic protection: An anticorrosion technique for metal installations; pipelines, tanks. buildings in which weak electric currents are established to offset the current associated with metal corrosion.

Cathodic protection rectifier: The rectifier converts alternating current power supply into direct current output. This output is connected to a buried anode which produces an electrical current through the soil and into the pipeline, which is thus placed under cathodic protection

Centrifugal pump: A pump made with blades or impellers in a close-fitting case. The liquid is pushed forward by the impellers as they rotate at high speed. Centrifugal pumps, because of their high speed, are capable of handling large volumes of liquid.

CCAA: California Clean Air Act.

CCC: California Coastal Commission; a state agency responsible for regulating development along the California coastline.

CCR: California Code of Regulations

CCW: Clean Coastal Waters.

CDC: California Department of Conservation.

CDFG: California Department of Fish and Game.

CDMG: California Department of Mines and Geology.

CEQA: California Environmental Quality Act.

CERCLA: Federal Comprehensive Environmental Response, Compensation and Liability Act.

CERCLIS: Comprehensive Environmental Response Compensation and Liability Information System.

CFR: Code of Federal Regulations.

Chaparral: Dense thicket of shrubs and small trees, characteristic of southwestern U.S.

Channel Lining: Artificial hardening of the sides and/or bed of a stream channel to prevent erosion. Concrete, soil cement and rock riprap are typical channel linings.

Check valve: A valve with a free-swinging tongue or clapper that permits liquid to flow in one direction only, as in a pipeline.

Chemoreception: Ability to react to and differentiate between different chemical stimuli, such as through taste and smell.

CIT: California Institute of Technology.

CIWMB: California Integrated Waste Management Board.

Closed loop control: When referring to computers, a term meaning complete control is vested in the computer.

CLUP: Coastal Land Use Plan, County of Santa Barbara.

CNDDB: California Natural Diversity Data Base

CNEL: Community Noise Equivalent Level; the averaging of noise levels on a measurement scale of decibels that increases the actual noise measurement, to account for an increased sensitivity to noise during late evening, nighttime, and morning hours (the increments are 5 dB from 7 to 10 pm and 10 dB from 10 pm to 7 am).

CNPS: California Native Plant Society.

CO: Carbon Monoxide; a colorless, odorless, toxic gas produced by incomplete combustion of carbon in fossil fuels.

Coastal Block: Geologic term describing area adjacent to the coast, which may be faulted or fractured.

Coating and wrapping: A field operation for preparing a pipeline to be lowered into the ditch. The line is coated with an inert material, then spiral wrapped with a tough, chemically impregnated paper. Machines ride the pipe and coat and wrap in one continuous operation. This process protects the pipeline from corrosion. For large pipeline jobs, the pipe may be coated and wrapped at a mill or construction yard site, and any breaks in the coating corrected when the pipe is installed.

COD: Chemical Oxygen Demand; the free oxygen-removing (combining) capability of chemical substances in liquid.

COE: U.S. Army Corps of Engineers.

Concentration: The relative content of a component (as dissolved or dispersed material) and measured by weight or volume of material per unit of volume of the medium.

Concentration, average: The average of a series of measurements of concentration.

Concentration, maximum: The highest individual or average measurement of concentration.

Control panel: An assembly of indicators and recording instrument; pressure gauges, warning lamps, and other visual or audible signals for monitoring and controlling a system.

Corrosivity: Is an estimate of the potential for soil-induced chemical action that dissolves or weakens uncoated shell.

CPR: cardiac/pulmonary resuscitation

CRMP: Cultural Resource Management Plan

Crude runs: The amount of crude oil refined through crude oil distillation; usually presented on a per day basis.

CSC: California Species of Concern.

CSFM: California State Fire Marshal.

CSLC: California State Lands Commission (the Lead Agency for this project under CEQA).

Cultural Resource: Places or objects important for scientific, historical, and religious reasons to cultures, communities, and individuals.

CWA: Clean Water Act

Cyclonic: An large air mass circulating counterclockwise, in northern hemisphere.

Decibel (dB): A logarithmic unit which describes the wide range of sound intensities to which the human ear is sensitive.

Decibel-A Weighted (dBA): Decibel unit scale that is modified to better represent the relative insensitivity of the human ear to low-pitched sounds.

Degradation (of a stream channel bed): Lowering of stream bed elevation, caused by sediment-transport capacity in excess of the sediment supply. Degradation can be long-term (after the passage of many stream flows) or short-term (caused by a single stream flow).

DEIR: Draft Environmental Impact Report (see EIR).

Desert Low: An atmospheric low pressure air mass over the California desert.

DHS: Department of Health Services.

Diffusion model: A model, calculated by formula, graphs, or computer, that estimates the dilution of an air pollutant as it is carried downwind. The models are based on physical principles with various simplifications to aid solvability.

Dispatcher: An employee responsible for scheduling and controlling movement of oil through pipelines.

DTSC: Department of Toxic Substance Control

DWP: Department of Water and Power.

EIR: Environmental Impact Report; an environmental impact assessment document prepared in accordance with the California Environmental Quality Act (CEQA).

EMFAC7EP: Emission Factor Version 7EP.

Emission: Unwanted substances released by human activity into air or water.

Emission, primary: An emission that is treated as inert (non-reactive).

Emission, secondary: Unwanted substances that are chemical byproducts of reactive primary emissions.

Emission Control Device: Any piece of equipment that reduces the release of any air pollutant into the atmosphere; see BACT.

Emission Limit: A regulatory standard that restricts the discharge of an air pollutant into atmosphere.

Environmentally Superior Alternative: Alternative selected by the CEQA lead agency which provides an overall environmental advantage over the other alternatives.

EPA: U.S. Environmental Protection Agency; a federal agency that works to protect the environment.

ESH: Environmentally Sensitive Habitat; an area designated by governmental agencies as requiring special administration or protection.

ESHA: Environmentally Sensitive Habitat Area; an area designated by governmental agencies as requiring special administration or protection.

Ethnohistoric: Ethnological information collected during historic times, for instance, that from the Spanish mission registers.

Fault: A fracture or zone of fractures in rock strata which have undergone movement that displaces the sides relative to each other, usually in a direction parallel to the fracture. Abrupt movement on faults is a cause of most earthquakes.

FBE: Fusion bond epoxy.

Feeder Pipeline: A short pipeline connecting two petroleum facilities or pipelines.

Flange: A type of pipe coupling made in two halves. Each half is screwed or welded to a length of pipe and the two halves are then bolted together joining the two lengths of pipe.

Floating roof: A roof that rests on the surface of the oil contained in a tank rather than on a structural member. The roof raises and lowers with the level of liquid within the tank.

Flora: Plants or plant life.

FPP: Fire Protection Plan.

FRHZ: Fault Rupture Hazard Zone (State of California determination).

Fugitive dust: Airborne pulverized soil particles.

g: (a) gram; (b) gravities, a unit of acceleration equal to that produced on free falling bodies at the earth's equator.

Gaussian: A diffusion model named after the mathematician Gauss for representing pollution plumes. A statistical formulation of pollutant concentration in the downwind direction and the lateral spreading of the pollutants, based on the wind speed and stability of the atmosphere. Modified in various ways to take into account presence of an inversion layer and gravitational settling of particles in the plume.

General Scour: Degradation of a channel bed as a result of imbalance of channel sediment-transport capacity and supply during a single stream flow.

Geophysical Survey: General term for survey of land forms using geologic mapping, trenching, soil testing, percolation testing, echo sounding, or other techniques.

Gpd: Gallons per day, a measure of flow rate.

Gpm: Gallons per minute; a measure of flow rate.

Gravity: A measure of the density or weight of crude oil; higher "degrees API" means lighter, or better quality oil.

H_2S: Hydrogen sulfide; a toxic gas found naturally in petroleum.

HAPs: Hazardous Air Pollutants.

Hazard Index: The estimated exposure to a given substance being discharged from a facility divided by the acceptable exposure level for that substance summed over all pollutants.

HAZMAT: Hazardous Materials Response Unit.

HC: Hydrocarbons; a mixture of hydrocarbon compounds usually referred to in the vapor state.

Header: A large diameter pipe into which a number of smaller pipes are perpendicularly welded or screwed; a collection point for various liquid gathering lines.

High flow: High volumes of water, as into an estuary, produced by copious runoff after period of heavy rainfall.

HMA: Housing Market Area; see Socioeconomics.

Horsepower: A unit of power equivalent to 33,000 foot-pounds per minute or 745.7 watts of electricity.

HRR: Hazard ranking required.

HSWA: Hazardous Solid Waste Act.

HVAC: Heating, Ventilating, and Air Conditioning

HVHS: Heavy viscosity, high sulfur.

HWIS: Hazardous Waste Information System.

HWCL: California Hazardous Waste Control Law.

Hydrocarbons: Compounds composed principally of carbon and hydrogen; they occur in petroleum, natural gas, coal, and bitumens.

Hydrocarbons, nonmethane: Mixture or concentration of hydrocarbons with the methane fraction ignored. One of many formulations for reactive hydrocarbons.

Hydrocarbons, reactive: Mixture or concentration of hydrocarbons with fraction assumed to be nonreactive removed from consideration. See VOC.

Hydrostatic testing: Filling a pipeline or tank with water under pressure to test for tensile strength; its ability to hold pressure without rupturing.

ID: Inside diameter of pipe; used in specifying pipe size.

Inhibitor: A chemical used to inhibit or retard internal corrosion of pipelines.

Inventory, emission: A list of daily or annual emissions, listed by pollution source category (e.g., trains, refineries, agriculture, etc.).

Inversion: A layer of air in the atmosphere in which the temperature increases with altitude at a rate greater than normal (adiabatic). Pollutants tend to be trapped below the inversion.

Invertebrate: Animals that lack a spinal column.

ISCST: Industrial Source Complex (Short Term); an EPA-approved computer air quality module.

Isobath: Contour line that is at equal depth along its length.

km_2 or km^2: Square kilometer.

KW: Kilowatt.

Kwh: Kilowatt hour.

L_{10}: An average of noise levels that are exceeded 10 percent of the time during the measurement period.

L_{eq}: Average level of sound determined over a specific period of time.

L_{dn}: The average ambient noise level in dBA with levels between 10 p.m. and 7 a.m. increased by 10 dBA.

Lateral Erosion: Horizontal movement of a channel bank, or channel widening, caused by water-transport of bank material.

Lineup clamps: A device that folds the ends of two joints of pipe together in precise alignment for welding.

Liquefaction: The process of making or becoming liquid (soils).

LNG: Liquid Natural Gas; short-chained hydrocarbons that can be liquified by cooling and application of pressure.

LOS: Level of Service; a measure of roadway congestion, ranging from A (free flowing) to F (highly congested).

Local scour: Lowering of a channel bed as a result of a local disturbance to flow, such as bridge piers, a sudden drop or a sharp channel bend.

Low flow: Low rate of water flow due to scant rainfall and low runoff.

Low-Flow Incisement: Formation of a local, small channel inside a larger stream channel as a result of low-discharge flows.

LUFT: Leaking underground fuel tanks also know as LUST.

LUST: Leaking underground storage tank.

M: Moment magnitude (measure of earthquake severity)

m: Meter, length equal to 30.48 inches.

MAOP: Maximum Allowable Operating Pressure.

MATES: Magnitude of Ambient Air Toxics impacts Existing Sources.

Macroinvertebrate: Pertaining to invertebrates that are visible to the naked eye.

Macroalgae: Pertaining to large algae, such as kelp, as distinguished from microscopic algae.

Manifold: An area where pipelines entering and leaving a pump station or terminal converge and where all valves for controlling the incoming and outgoing streams are contained.

Master control unit: A control center, usually at the terminal, from which a pipeline is monitored by microwave devices to ensure correct flow within a pipeline as well as the integrity of protective devices along a pipeline.

mbbl/cd: Thousands of barrels per calendar day

MBD: Thousand barrels per day.

MBL: Thousand barrels; see BBL.

Median: The mid-value is a series of values, with half having greater value and half lower value. To be distinguished from "average."

MEI: Maximum Exposed Individual; see Air Quality.

MF: Magnetic flux.

Microclimate: Distinctive climate within a small geographic area.

Micron: One millionth of a meter

Microwave: Radio communications which are of sufficiently short wavelength (or high frequency) as to be focused on a line-of-sight between sending and receiving equipment. These radio signals carry information for control purposes.

Mixing height: The distance from the ground to a daytime (temperature) inversion layer.

M_L: Richter magnitude.

MM: Modified Mercalli.

MM: Maximum modification.

MMBL: Million Barrels; see BBL.

MM Btu: Million British thermal units.

MMSCF: Million standard cubic feet.

Monitoring station: A mobile or fixed site equipped to measure instantaneous or average ambient air pollutant concentrations.

MOP: Maximum Operating Pressure.

MP: Milepost.

Multipathway Pollutants: Pollutants that pose a risk to public health through individual inhalation, ingestion (from food, water, or soil) or dermal absorption.

MW: Megawatts

MYBP: Million years before present.

NAAQS: National Ambient Air Quality Standards; see AAQS.

Nitrogen oxides: A gaseous mixture of nitric oxide (NO) and nitrogen dioxide (NO_2) and symbolically represented as NO_3).

NO: Nitric oxide. A molecule of one nitrogen and one oxygen atom. Results usually from combustion of organic substances containing nitrogen and from recombination of nitrogen decomposed in air during high temperature combustion.

NO_2: Nitrogen Dioxide. A molecule of one nitrogen and two oxygen atoms. Result usually from further oxidation of nitric oxide (NO) in the atmosphere. Ozone accelerates the conversion.

NO_x: Nitrogen Oxides; poisonous and highly reactive gases produced when fuel is burned at high temperatures, causing nitrogen in the air to combine with oxygen.

Noise level, median: The level of noise exceeded 50 percent of the time. Usually specified as either the daytime or the nighttime median noise level. Also given the designation L_{50}.

NPPA: Native Plant Protection Act.

NSR: New Source Review; see Air Quality.

O_3: Ozone; a colorless gas formed by a complex series of chemical and photochemical reaction of reactive organic gases, principally hydrocarbons, with the oxides of nitrogen, which is harmful to the public health, the biota and some materials.

OD: Outside diameter of pipe; used in specifying pipe sizes.

OES: Office of Emergency Services

Oil Sump: Collector at base of equipment to hold uncirculated oil.

OPA: Oil Pollution Act of 1990.

Open loop control: Requires a decision by pipeline dispatcher rather than complete control by the computer.

OPS: Office of Pipeline Safety

OSCP: Oil Spill Contingency Plan

OSHA: U.S. Occupational Safety and Health Administration, a federal agency regulating the health safety of the work place.

OSPR: Oil Spill Prevention and Response

OTP: Oil Transportation Plan.

Oxidant: A mixture of chemically oxidizing compounds formed from ultraviolet stimulated reactions in the atmosphere, with ozone a principal fraction.

Ozone: A molecule of three oxygen atoms — O_3. A principal component of "oxident" in photochemically polluted atmospheres.

PA: Programmatic Agreement

PAH: Polyaromatic hydrocarbons; hazardous air pollutants.

Particulate matter (particulates): Very fine sized solid matter or droplets, typically averaging one micron or smaller in diameter. Also called "aerosol."

pH: A measure of acidity or alkalinity.

Photochemical Pollutant: Reactive organic compounds (ROC) and nitrogen oxides (NOx), photochemical pollutants that absorb energy from the sun and react chemically to form ozone (O_3).

Phytoplankton: Microscopic plants that form the base of the marine/aquatic food chain.

Pig (scraper): A cylindrical device (3 to 7 feet long) inserted in a pipeline for the purpose of sweeping the line clean of water, rust, or other foreign matter. When inserted in the line at a "scraper trap," the pressure of the oil stream behind it pushes the pig along the line. Pigs or scrapers are made with tough, pliable discs that fit the internal diameter of the pipe, thus forming a tight seal as they move along cleaning the pipe walls.

Pig, smart: A pig that contains measuring and recording devices and used to find flaws in the pipe. They are designed with various levels of sophistication.

Pig Launch/Receiver: An apparatus used to insert or retrieve a cleaning or inspection device (pig) into or from a pipeline.

Pipe sling: A stirrup-like sling made of heavy belting material used on the winch line of lifting equipment for handling, raising, and lowering of pipe.

Pipeline Corridor: 50 - to 200-foot strip of land for installation of the proposed pipeline. It can be part of a utility corridor containing other linear utility systems.

PLC: Programmable logic controllers.

PM_{10}: Particulate matter less than 10 micron in size, which is small enough to be inhaled deeply into the lungs and cause disease.

PNA: Polynuclear aromatic compounds.

Ppb: Parts per billion, a measure of the amount of one substance in a second, which is the carrier.

Ppm: Parts per million, a measure of the amount of one substance found in a carrier.

Ppt: Parts per thousand, a measure of the amount of one substance found in a carrier.

Pressure-Reduction Station: An on-line station with equipment that maintains pipeline pressure to within design limits.

Products pipeline: A pipeline carrying refined petroleum products such as gasoline or jet fuel.

Pro-rated Capacity: When desired pipeline shipments exceed capacity, each shipper's quantity is reduced based on their percentage of the total desired shipment.

Psi: Pounds per square inch.

Psig: The gauge value of pressure in pounds per square inch.

PSD: Prevention of Significant Deterioration; a federal set of limits on emissions of sulfur oxide and particulates to protect air quality in non-urban area.

Pumping unit: A pipeline pump and driver.

Radiographic Inspection: Use of high energy radiation to study the condition of pipeline structure, especially used for pipeline weld inspection.

RCL: Resource Conservation Service.

Relief valve: A valve that is set to open when pressure on a liquid or gas line (or tank) reaches a predetermined level.

Riparian: Area along the banks of a river or lake supporting specialized plant and animal species.

Riprap: A foundation constructed of broken stones or boulders loosely placed or thrown together, as in deepwater, on a soft bottom, or as a seawall to protect against erosion.

ROC: Reactive Organic Compounds (see Air Quality) that are chemically sensitive to the ultraviolet light in sunlight.

ROW: Right of way; an area or strip of land to allow access or to allow a utility to pass through public or private lands.

RTU: Remote Terminal Units; a device that takes data from field transmitters that detect pressure, temperature and other parameters.

RWQCB: Regional Water Control Board.

SCADA: Supervisory Control and Data Acquisition System; data-gathering system for the operation of the pipeline.

SCF: Standard cubic foot; a measure of volume or rate of flow of liquid.

Scraper Trap: A facility on a pipeline for inserting and retrieving a scraper or "pig." The trap is essentially a "breechloading" tube isolated from the pipeline by valves. The scraper is loaded into the tube like a shell into a shotgun; a hinged plug is closed behind it, and line pressure is then admitted to the tube behind the scraper. A valve is opened ahead of the scraper and it is literally pushed into the line and moved along by the oil pressure.

SCS: Soil Conservation Service

SEA: Significant Ecological Area; an area containing an ecosystem of value and requiring government protection.

Seedbank: The layer of topsoil containing native plant seed material, which is frequently used as a "seed bank" for revegetation of native plants.

Sensitive Receptor: That segment of the population that because of age or weak health is more susceptible to the effects of air pollution, noise, oil spill. etc., than the population at large.

SFPP: Santa Fe Pacific Pipeline Partners, L.P. (also known as the Applicant)

Shrink-swell potential: Is the expansion or contraction of primarily clay-rich soils during alternating wetting and drying cycles.

SHPO: State Historic Preservation Office

SIC: Standard Industrial Classification.

SIP: State Implementation Plan (see Air Quality); a document required periodically from each county by EPA that indicates the progress and the planning of the county for improving the quality of its air.

Slough: A place of deep mud or mire; bog. A stagnant swamp, backwater, bayou inlet, or pond in which water backs up.

SO_X: Sulfur oxides. The group of compounds formed during combustion or thereafter in the atmosphere of sulfur compounds in the fuel, each having various levels of oxidation, ranging from two oxygen atoms for each sulfur atom to four oxygen atoms.

SO_2: Sulfur Dioxide; a corrosive and poisonous gas produced from the complete combustion of sulfur in fuels.

Sour crude oil: Crude oil with a sulfur content grater than 1 percent; definition is dependent upon individual refinery capabilities.

Spread: A group of construction personnel and equipment assembled to do a major construction job; spread may be literal, as the workers and equipment are strung out along the right-of-way.

SSR: Site screening required.

SSZ: Special studies zone (active earthquake fault).

Stream Scour: Lowering of a stream bed during the passage of a single stream flow. Stream scour can be local in nature (see Local Scour) or more wide-spread (see General Scour).

Stringing pipe: Placing joints of pipe end-to-end along a pipeline right-of-way in preparation for welding the joints together to form a pipeline.

Substrate: Geologic term describing soil or geologic layers underlying a project site or construction area.

Sulfates: Compounds in air or water that contain four oxygen atoms for each sulfur atom. See SO_x.

Sulfur oxides: A gaseous mixture of sulfur dioxide (SO_2) and sulfur trioxide (SO_3) and symbolically represented as SO_x. Can include particulate species such as sulfate compounds ($-SO_4$).

Sweet crude: Definition is dependent upon individual refinery capabilities. For purposes of this report, sweet will mean that sulfur content is 1 percent or less.

SWPPP: Storm Water Pollution Prevention Plan.

TAC: Toxic Air Contaminants.

Tack weld: Spot welds temporarily joining two pieces of metal to hold them in position for complete welding.

Tank dike: A wall of earth or concrete surrounding an oil tank to contain the oil in the event of the tank running over or rupturing.

TCM: Transportation Control Measures.

T&D: Throughput and Deficiency.

TDM: Transportation Demand Management; a system of analysis designed to reduce traffic levels and thereby reduce air pollution.

TDS: Total Dissolved Solids

Terrestrial: Related to or living on land. Terrestrial biology deals with upland areas as opposed to shorelines or coastal habitats.

THC: Total Hydrocarbon.

Throughput: The volume of feedstock (e.g., crude oil) processed or transported in a specified time.

Tie-in: An operation in pipeline construction in which two section of line are connected together.

tpd: Tons per day.

TSP: Total Suspended Particulates; solid or liquid particles small enough to remain suspended in air. PM_{10} is the portion of TSP that can be inhaled.

Turbidity: Cloudiness or muddiness of water or ocean, resulting from suspended or stirred up particles.

UCB: Uniform Building Code.

ug/m^3: Millionths of a gram per cubic meter, a unit of concentration in liquids or gases.

USA: Underground service alert.

USACE: U.S. Army Corps of Engineers

USFWS: U.S. Fish and Wildlife Service (an agency of the U.S. Department of the Interior).

USGS: U.S. Geological Survey (an agency of the U.S. Department of the Interior).

Utility Corridor: A strip of land, or an easement, on which utility or pipelines are constructed.

Vapor Recovery: Air pollution control methods, which reduce emissions by capturing vapors to avoid their release into the atmosphere.

Vapor Transfer: An emission control device, which recovers volatile pollutants, such as hydrocarbons, and relocates them to a location for recovery or destruction.

V/C: Volume to Capacity ratio; a measure of the capacity of a roadway. When V/C is 100 percent, no more traffic can be accommodated.

Vertical Stratification: Corresponding to a natural arrangement of layers within the water column of the ocean that vary with depth.

Viscosity: Term applied to a fluid indicating its resistance to sheer. In common terms, how "sticky" the fluid is.

VMT: Vehicle miles traveled, usually per day.

VOC: Volatile organic compounds.

VAC: Volts Alternating Current

vpd: Vehicles per day; see Transportation.

VRS: Vapor Recovery System.

Watershed: The area contained within a drainage divide above a specified point on a stream.

Wellhead: Source for water to spring or well.

WSF: Water Soluble Fraction.